What Is Claimed Is:

1. A method for identifying an authorized user using a spectrogram includes the steps of:

(i) detecting an end point of a speech after a user speaks;

(ii) extracting speech features from a spectrogram of the speech;

(iii) determining whether training is necessary, and, if so, taking the speech features as a reference template, setting a threshold and going back to (i), otherwise, proceeding to the next step;

(iv) matching patterns of the speech features and the reference template;

(v) computing a distance between the speech features and the reference template according to a matching result of (iv) to obtain a distance scoring;

(vi) comparing the distance scoring with the threshold;

(vii) determining whether the user is authorized according to a compared result of (vi).

2. The method as claimed in claim 1 wherein the detection of the end point of the speech in (i) includes the steps of:

(i) filtering the speech with a low-pass filter;

(ii) converting analog speech signals to digital speech signals by an A/D converter;

(iii) pre-emphasizing the digital speech signals to thoroughly model lower-amplitude and higher-frequency parts of the speech;

(iv) extracting a majority magnitude for each frame;

(v) comparing the majority magnitude of each frame with the threshold to determine a begin point and an end point of the speech.

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3. The method as claimed in claim 1 wherein the speech features are retrieved by using a Princen-Bradley filter bank to transform the detected speech signal to obtain a corresponding spectrogram.

4. The method as claimed in claim 2 wherein the majority magnitude is obtained by counting the total number of each absolute amplitude level, and the great majority of the absolute amplitude levels is defined as the majority magnitude of the current frame.

5. The method as claimed in claim 2 wherein the process of determining the begin point and the end point of the speech in the step (v) includes the steps of:

(i) setting a threshold;

(ii) determining whether the detection of the begin point is beginning, if yes going to step (iv), otherwise going to next step;

(iii) determining whether the majority magnitudes of three adjacent frames are all larger than the threshold, if not, then changing the threshold and going on to the measurement of the next majority magnitude and going back to step (ii), otherwise the beginning point having been detected, going on to the measurement of the next majority magnitude and going back to step (ii);

(iv) delaying a period of time;

(v) determining whether the majority magnitudes of three adjacent frames are all smaller than the threshold, and, if not, going on the measurement of the next majority magnitude and going back to step (v), otherwise the end point has been detected.

1   6. An apparatus for identifying an authorized user by
2   using spectrograms comprising:
3   a low-pass filter for limiting the frequency range of
4   submitted speech.
5   an A/D converter for converting analog speech signals to
6   digital speech signals.
7   a digital signal processor for receiving digital speech
8   signals from the A/D converter and performing operations in
9   each step of the method as claimed in claim 1; and
10   a memory device for storing data of a threshold and a
11   reference template which are required in the operations of the
12   digital signal processor.